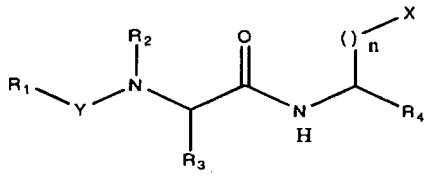
We claim:

1. A cell adhesion inhibitory compound of formula (I):



(I)

or a pharmaceutically acceptable derivative thereof, wherein:

X is $-CO_2H$;

Y is selected from the group consisting of -CO-, $-CH_2-$, $-SO_2-$ and $-PO_2-$;

R_1 is selected from the group consisting of alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, cycloalkyl-substituted alkyl, cycloalkenyl-substituted cycloalkyl, alkoxy, alkenoxy, alkynoxy, alkylamino, alkenylamino, alkynylamino, N-alkylurea-substituted alkyl, alkylcarbonylamino-substituted alkyl, and aminocarbonyl-substituted alkyl;

R_2 is selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, and cycloalkenyl;

R_3 is selected from the group consisting of alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, hydroxy-substituted alkyl, alkoxy-substituted alkyl, amino-substituted alkyl, thiol-substituted alkyl, alkylsulfonyl-substituted alkyl, (hydroxy-substituted alkylthio)-substituted alkyl, thioalkoxy-substituted alkyl, acylamino-substituted alkyl, alkylsulfonylamino-substituted alkyl, [N-(alkyl, alkenyl or alkynyl)-or N,N-[dialkyl, dialkenyl, dialkynyl or (alkyl,alkenyl)-amino]carbonyl-substituted

alkyl, carboxyl-substituted alkyl, dialkylamino-substituted acylaminoalkyl, and and amino acid side chains selected from arginine, asparagine, glutamine, S-methyl cysteine, methionine and corresponding sulfoxide and sulfone derivatives thereof, glycine, leucine, isoleucine, allo-isoleucine, tert-leucine, norleucine, alanine, ornithine, glutamine, valine, threonine, serine, aspartic acid, beta-cyanoalanine, and allothreonine;

R_4 is selected from the group consisting of hydrogen, alkyl, cycloalkyl, alkenyl, cycloalkenyl, alkynyl, amido, aminocarbonyl, mono- or dialkylaminocarbonyl, mono- or diacylaminocarbonyl, aliphatic acyl, alkyl optionally substituted with substitutents selected from the group consisting of amino, carboxy, hydroxy, mercapto, mono- or dialkylamino, mono- or diacylamino, alkoxy, alkenoxy, thioalkoxy, thioalkenoxy, and thioalkynoxy; and

n is 0, 1 or 2.

2. The compound according to claim 1, wherein R_4 is selected from the group consisting of alkyl, cycloalkyl, alkyenyl, cycloalkenyl, and alkynyl.

3. The compound according to claim 1, wherein R_1 is selected from the group consisting of cyanomethyl, cyclohexylmethyl, methyl, n-hexyl, t-butoxy, t-butylamino, 5-(N'-t-butylurea)pentyl, 2,2-dimethylpropyl, and hydroxyethylthiomethyl.

4. The compound according to claim 1, wherein R_1 is selected from the group consisting of cyanomethyl, cyclohexylmethyl, methyl, n-hexyl, t-butoxy, t-butylamino, 5-(N'-t-butylurea)pentyl, and 2,2-dimethylpropyl.

5. The compound according to claim 1, wherein R_2 is hydrogen or methyl.

6. The compound according to claim 5, wherein R_2 is hydrogen.

7. The compound according to claim 1, wherein R_3 is selected from the group consisting of 2-(methylsulfonyl)-ethyl, 3-(hydroxy-propylthio)-methyl, 4-(methylsulfonylamino)-butyl, 4-acetylaminobutyl, aminomethyl, butyl, hydroxymethyl, isobutyl, methyl, methylthiomethyl, propyl, N,N-(methylpropargyl)-amino, 2-(methylthio)-ethyl, 2-(N,N-dimethylamino)-ethyl, 4-amino-butyl, t-butoxy-carbonylaminomethyl, sec-butyl, t-butyl, N,N-dimethyl-aminocarbonylmethyl, 1,1-ethano, 1-hydroxyethyl, 1-methoxyethyl, carbonylmethyl, 2-methylsulfinylethyl, asparagine side-chain, 4-(methylurea)butyl, 4-methylsulfonylaminobutyl, hydroxymethylthiomethyl, 2-methylsulfonylethyl, 4-propionylaminobutyl, 4-ethoxycarbonylaminobutyl, methoxycarbonylaminobutyl, carbomethoxymethylthiomethyl, 4-t-butylureabutyl, carboxymethylthiomethyl, dimethylamidomethylthiomethyl, acetylaminopropyl, 3-methylureapropyl, 4-trifluoroacetylaminobutyl, dimethylaminomethylthiomethyl, dimethylaminoethylthiomethyl, and 4-(dimethylaminoacetylamino)butyl.

8. The compound according to claim 7, wherein R_3 is selected from the group consisting of 2-(methylsulfonyl)-ethyl, 3-(hydroxypropylthio)-methyl, 4-

(methylsulfonylamino)-butyl, 4-acetylaminobutyl, aminomethyl, butyl, hydroxymethyl, isobutyl, methyl, methylthiomethyl, propyl, N,N-(methylpropargyl)-amino, 2-(methylthio)-ethyl, 2-(N,N-dimethylamino)-ethyl, 4-amino-butyl, t-butoxy-carbonylaminomethyl, sec-butyl, t-butyl, N,N-dimethyl-aminocarbonylmethyl, 1,1-ethano, 1-hydroxyethyl, 1-methoxyethyl, carbonylmethyl, 2-methylsulfinylethyl, and asparagine side chain.

9. The compound according to claim 7, wherein R_3 is selected from the group consisting of 2-(methylsulfonyl)-ethyl, 3-(hydroxypropylthio)-methyl, 4-(methylsulfonylamino)-butyl, 4-acetylaminobutyl, isobutyl,, 2-(methylthio)-ethyl, and 4-(ethoxycarbonylamino)butyl.

10. The compound according to claim 9, wherein R_3 is selected from the group consisting of 2-(methylsulfonyl)-ethyl, 3-(hydroxypropylthio)-methyl, 4-(methylsulfonylamino)-butyl, 4-acetylaminobutyl, isobutyl, and 2-(methylthio)-ethyl.

11. The compound according to claim 1, wherein R_4 is selected from the group consisting of methyl, 4-methylsulfonylamino, 4-propionylamino, n-pentyl, carboxymethyl, 2-carboxyethyl, allyl, ethynyl, 2-propenyl, 2-propynyl, and propyl.

12. The compound according to claim 11, wherein R_4 is methyl.

13. The compound according to claim 11, wherein R_4 is allyl or ethynyl.

14. The compound according to claim 1, wherein Y is -CO-, $-CH_2-$ or $-SO_2-$.

15. The cell adhesion inhibitory compound according to claim 14, wherein Y is -CO-.

16. The cell adhesion inhibitory compound according to claim 1, wherein n is 1.

17. A pharmaceutical composition comprising a compound according to claim 1 in an amount effective for prevention, inhibition or suppression of VLA-4 mediated cell adhesion and a pharmaceutically acceptable carrier.

18. The pharmaceutical composition according to claim 17, further comprising an agent selected from the group consisting of corticosteriods, bronchodilators, antiasthmatics, antiinflammatories, antirheumatics, immunosuppressants, antimetabolites, immunonodulators, antipsoriatics and antidiabetics.

19. A method of preventing, inhibiting or suppressing cell adhesion in a mammal comprising the step of administering to said mammal the pharmaceutical composition according to claim 17.

20. The method according to claim 19, wherein said method is used for preventing, inhibiting or suppressing cell adhesion-associated inflammation.

21. The method according to claim 20, wherein said method is used for preventing, inhibiting or suppressing cell adhesion-associated immune or autoimmune response.

22. The method according to claim 19, wherein said method is used to treat or prevent a disease selected from the group consisting of asthma, arthritis, psoriasis, transplantation rejection, multiple sclerosis, diabetes and inflammatory bowel disease.